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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/319,258	06/11/1999	MOTOO ASAI	P17856	2717

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EXAMINER

ALCALA, JOSE H

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 07/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/319,258

Applicant(s)

ASAI ET AL.

Examiner

Jose H Alcala

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6,8,11,12,46 and 49 is/are allowed.
- 6) ☒ Claim(s) 1-5, 9-10, 13-26, 28-45 and 48 is/are rejected. ^{27:47}
- 7) ☒ Claim(s) 7, 33 and 34 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of 37 CFR 1.71(a)-(c):

(a) The specification must include a written description of the invention or discovery and of the manner and process of making and using the same, and is required to be in such full, clear, concise, and exact terms as to enable any person skilled in the art or science to which the invention or discovery appertains, or with which it is most nearly connected, to make and use the same.

(b) The specification must set forth the precise invention for which a patent is solicited, in such manner as to distinguish it from other inventions and from what is old. It must describe completely a specific embodiment of the process, machine, manufacture, composition of matter or improvement invented, and must explain the mode of operation or principle whenever applicable. The best mode contemplated by the inventor of carrying out his invention must be set forth.

(c) In the case of an improvement, the specification must particularly point out the part or parts of the process, machine, manufacture, or composition of matter to which the improvement relates, and the description should be confined to the specific improvement and to such parts as necessarily cooperate with it or as may be necessary to a complete understanding or description of it.

2. The specification is objected to under 37 CFR 1.71 because it has disclosed that in one of the embodiments: the surface of the roughened layer is covered with a layer of a metal having an ionization tendency of more than copper but not higher than titanium or a noble metal, which is not enabling because copper has an ionization tendency higher than titanium or a noble metal, so it is impossible to have a metal with an ionization tendency of more than copper and not higher than titanium or a noble metal. It is suggested that what the applicant meant to disclose was that: the surface of the roughened layer is covered with a layer of a metal having an ionization tendency of less than copper but more than titanium or a noble metal.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 2,7,22-24,27,45 and 47 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding Claims 2 and 7, the limitation that: "the surface of the roughened layer is covered with a layer of a metal having an ionization tendency of more than copper but **not higher** than titanium or a noble metal", is not enabling because copper has an ionization tendency higher than titanium or a noble metal, so it is impossible to have a metal with an ionization tendency of more than copper and less than titanium or a noble metal. It is suggested that what the applicant meant to say is that: "the surface of the roughened layer is covered with a layer of a metal having an ionization tendency of less than copper but more than titanium or a noble metal".

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 13-21,28-43 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding Claims 13 and 14, it is not clear how is the alignment mark "isolated" and what are the structural limitations of the alignment marks and the electrical insulation used. In addition, it is not clear how can the conductor layer "comprise" an alignment mark, and be isolated from it at the same time.

Regarding Claim 15, 28 , it is not clear if the roughened layer is exposed through the solder resist.

Regarding Claim 16, it is not clear if the metal layer of nickel- gold is formed over the roughened layer or not.

Regarding Claims 19-21, 29-43, it is not clear what are the structural limitations that set forth the alignment mark, and how are the components of the alignment mark related to the other existing elements.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

8. *ye* Claims 1-5, ~~9~~ 10, 13-26, 28-45, and 48 are rejected under 35 U.S.C. 102(e) as being anticipated by Ono et al. (US Patent No. 6,217,987). As best understood by the examiner:

Regarding Claim 1, Ono teaches a printed circuit board (Figure 22) having a plurality of interlaminar insulating layers (Reference number 2) and conductor circuits (Reference numbers 12,13) a substrate (Reference Number 1) wherein the conductor

circuit is comprised of a first film (Reference number 12) and a second film (Reference number 13) and a roughened layer (Reference Number 11) is formed on at least a part of the surface of the conductor circuit.

The limitations that the printed circuit board is "formed by laminating", the limitation: "repeating formation", and the limitations saying that the first film is "electroless plated" and that the second film is "electrolytic plated" are product by process limitations. If the product in the product-by-process claims are the same as or obvious from a product of the prior art, the claims are unpatentable even though the prior product was made by a different process. See *In re Thorpe*, 227 USPQ 964,966 (Fed.Cir 1985). A "product by process" claim is directed to the product per se, no matter how actually made, *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear.

Regarding Claim 2, Ono teaches a multilayer printed circuit board (See Figure 22) comprising a plurality of interlaminar insulating layers (Reference number 2) and conductor circuits (Reference numbers 12 and 13) said printed circuit board being, and

a roughened layer (Reference number 11) on at least a part of the surface of the conductor circuit, and the surface of the roughened layer is covered with a layer of a metal having an ionization tendency of more than copper but [less] not higher than titanium, or a noble metal.

The limitations that the printed circuit board is "formed by laminating", the limitation: "repeating formation", and the limitations saying that the first film is "electroless plated" and that the second film is "electrolytic plated" are product by process limitations. See the section about a product by process claim in the rejection for claim 1 above.

Regarding Claim 3, Ono teaches that the roughened layer is on at least part of the surface inclusive of a side surface of the conductor circuit (See figure 22).

Regarding Claim 4, Ono teaches that the roughened layer is on at least a part of a side face of the conductor circuit (See figure 22).

Regarding Claims 5,25 and 26, Ono teaches that the roughened layer (Reference Number 11) is a plated layer of copper-nickel-phosphorus alloy.

9. Regarding Claim 44, the limitations that the first film is "electroless plated" and that the second film is "electrolytic plated", and that that the "electrolytic plated film is formed on the electroless plated film" are product by process limitations. Ono teaches the structural limitations. See the section about a product by process claim in the rejection of Claim 1. Regarding Claim 9, Ono teaches a multilayer printed circuit board (Figure 22) comprising a substrate (Reference number 1) provided with an under layer conductor circuit (References 12,13 of Figure 14), an interlaminar insulating layer

(Reference 2 of Figure 16) formed thereon and an upper layer conductor circuit (References 15,16 of Figure 22) formed on the interlaminar insulating layer, and a viahole (Figure 17) connecting both the conductor circuits to each other, in which the viahole is comprised of an two films (Reference number 18 in figure 21), and a roughened layer (Reference number 11) having a roughened surface.

The limitations saying that the first film of the viahole is "electroless plated" and that the second film is "electrolytic plated" are product by process limitations. In addition the limitation saying that the roughened surface is "formed by etching treatment, polishing treatment, or redox treatment, or having a roughened surface formed by a plated film" is also a product by process limitation. See the section about a product by process claim in the rejection of Claim 1.

Regarding Claim 10, Uno teaches that the roughened layer (Reference Number 11) is a plated layer of copper-nickel-phosphorus alloy.

Regarding Claim 48, the limitations that the first film is "electroless plated" and that the second film is "electrolytic plated", and that that the "electrolytic plated film is formed on the electroless plated film" are product by process limitations. Ono teaches the structural limitations. See the section about a product by process claim in the rejection of claim 1.

Regarding Claims 13 and 14, Ono teaches a printed circuit board (Figure 22) provided with a conductor layer (Reference numbers 12,13) comprising an alignment mark, said alignment mark being electrically isolated from the conductor layer, and in

which a roughened layer (Reference Number 11) is formed on at least a part of the surface of the conductor layer.

Since there are not any clear structural limitations for the alignment mark, the label "alignment mark" has been treated as an intended use limitation, and it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed device from a prior art device satisfying the claimed structural limitations. See *Ex Parte Masham*, 2 USPQ F.2d 1647 (1987). The limitations that the films are electroless or electrolytic are product by process limitations, see explanation for claim 1 above.

Regarding Claim 15, Uno teaches, an opening (See Figure 17) exposing the conductor layer. The limitations regarding how the opening is made are product by process limitations. See the section about a product by process claim in the rejection of Claim 1.

Regarding Claim 16, Ono teaches that a metal layer of nickel-gold (See Figure 18) is on the conductor layer exposed from the opening portion.

Regarding Claims 17,32,37 and 42, the limitations regarding how the printed circuit board is made are product by process limitations. See the section about a product by process claim in the rejection for claim 1 above.

Regarding Claim 18, Uno teaches that the roughened layer (Reference Number 11) is on at least a part of the surface of the conductor layer.

Regarding Claims 19,20,21,30-32,35-37,40 – 42, there are no structural limitations clearly stated, leaving only limitations regarding how the printed circuit board

is made, which are product by process limitations. See the paragraph on product by process claims, in the rejection for claim 15.

Regarding Claim 22, Uno teaches that the roughened layer is on at least part of the surface inclusive of a side surface of the conductor circuit (See figure 22).

Regarding Claim 23, Uno teaches that the roughened layer is on at least a part of a side face of the conductor circuit (See figure 22).

Regarding Claim 24, Uno teaches that the roughened layer (Reference Number 11) is a plated layer of copper-nickel-phosphorus alloy.

Regarding Claim 28, Uno teaches an opening (Figure 17) exposing the conductor layer. The limitations regarding how the opening is made are product by process limitations. See the section about a product by process claim in the rejection for claim 1 above.

Regarding Claims 29,33,34,38,39,and 43, the limitations regarding how the printed circuit board is made are product by process limitations. See the section about a product by process claim in the 35 U.S.C. 102(e) rejection above.

Regarding Claim 45, the limitations that the first film is "electroless plated" and that the second film is "electrolytic plated", and that that the "electrolytic plated film is formed on the electroless plated film" are product by process limitations. Ono teaches the structural limitations. See the section about a product by process claim in the rejection of claim 1 above

Allowable Subject Matter

10. Claims 6,8,11,12,46 and 49 are allowed.
11. Claim 7 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action. Claim 7 has the allowable subject matter stated in the last office action for claims

Response to Arguments

12. Applicant's arguments with respect to claims 1-5,7-10,13-45,47-48 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

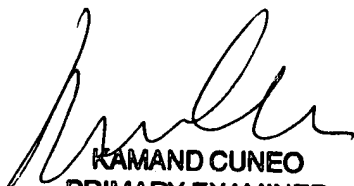
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jose H Alcala whose telephone number is (703) 305-9844. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JHA
July 19, 2002


KAMAND CUNEO
PRIMARY EXAMINER